

${}^{69}\text{Ni}$ IT decay (0.439 μs) 2003Ma50,1998Gr14

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 115, 1 (2014)	31-Jul-2013

Parent: ${}^{69}\text{Ni}$: $E=2700$; $J^\pi=(17/2^-)$; $T_{1/2}=0.439 \mu\text{s}$ 3; %IT decay=100.0

2003Ma50: ${}^9\text{Be}({}^{76}\text{Ge},\text{X})$ with $E(\text{Ge})=60 \text{ MeV/nucleon}$. Fragment product identified by energy loss and TOF. Level lifetime measured by the Advanced Time-Delayed $\gamma\gamma(t)$ method using four BaF_2 detectors at the LISE spectrometer at GANIL.

1998Gr14: $\text{Ni}({}^{86}\text{Kr}, \text{X}\gamma)$. $E({}^{86}\text{Kr})=60.3 \text{ MeV/nucleon}$ on natural Ni target using Alpha and LISE3 spectrometers at GANIL.

Measured E_γ , $\gamma\gamma$, $\gamma(t)$ fragment- γ coincidence with Si planar and HPGe detectors. Two isomeric states at $E=321 \text{ keV}$ and 2701 keV observed. Deduced $T_{1/2}$ of isomer.

All data are from **1998Gr14**, unless indicated otherwise.

 ${}^{69}\text{Ni}$ Levels

$E(\text{level})^\ddagger$	$J^\pi \dagger\#$	$T_{1/2}$	Comments
0	($9/2^+$)	11.4 s 3	$T_{1/2}$: From Adopted Levels.
321	($1/2^-$)		$E(\text{level})$: Suggested as an isomer by authors (1998Gr14). Supported by similar isomers identified in valence partner ${}^{91}\text{Nb}$.
915	($5/2^-$)	120 ps 34	$T_{1/2}$: From $\gamma\gamma(t)$ in ${}^9\text{Be}({}^{76}\text{Ge},\text{x}\gamma)$ (2003Ma50).
1959	($9/2^-$)		
2241	($13/2^+$)		
2552	($13/2^-$)	519 ps 24	$T_{1/2}$: From $\gamma\gamma(t)$ in ${}^9\text{Be}({}^{76}\text{Ge},\text{X}\gamma)$ (2003Ma50).
2700	($17/2^-$)	0.439 μs 3	$T_{1/2}$: From $\gamma(t)$ in $\text{Ni}({}^{86}\text{Kr},\text{X}\gamma)$ 1998Gr14 .

\dagger Assignments from **1998Gr14** based on level systematics which is in good agreement with large scale shell model calculations and the valence mirror concept for the isomers.

\ddagger Based on measured E_γ .

$\#$ From Adopted Levels.

 $\gamma({}^{69}\text{Ni})$

ΔE : No uncertainties are given by the authors except for 594 γ from **1998Gr14**.

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^{\text{@}}$	Comments
915	($5/2^-$)	594 I		321	($1/2^-$)			E_γ : Doublet as confirmed by $\gamma\gamma$ coincidence data in 1998Gr14 . Seen also in $\gamma\gamma$ data in 2003Ma50 .
1959	($9/2^-$)	1044		915	($5/2^-$)			
		1959		0	($9/2^+$)			
2241	($13/2^+$)	2241		0	($9/2^+$)			
2552	($13/2^-$)	311 $\#$	28 \ddagger	2241	($13/2^+$)			
		593 $\#$	72 \ddagger	1959	($9/2^-$)	[E2]	0.000981 I4	$\alpha=0.000981$ I4; $\alpha(\text{K})=0.000881$ I3; $\alpha(\text{L})=8.73\times 10^{-5}$ I3; $\alpha(\text{M})=1.228\times 10^{-5}$ I8; $\alpha(\text{N}+..)=5.18\times 10^{-7}$
								$\alpha(\text{N})=5.18\times 10^{-7}$ 8
2700	($17/2^-$)	148		2552	($13/2^-$)	[E2]	0.1285	$\alpha(\text{K})=0.1145$ I6; $\alpha(\text{L})=0.01224$ I8; $\alpha(\text{M})=0.001706$ 24; $\alpha(\text{N}+..)=6.39\times 10^{-5}$ 9 $\alpha(\text{N})=6.39\times 10^{-5}$ 9

\dagger No uncertainties are given by the authors except for 594 γ from **1998Gr14**.

\ddagger % branching from the 2552 level. Deduced by the evaluator from $\text{B}(\text{E}2)(\text{W.u.})(593\gamma)=0.63$ 3 given by **2003Ma50**. The source of

Continued on next page (footnotes at end of table)

^{69}Ni IT decay (0.439 μs) 2003Ma50,1998Gr14 (continued) $\gamma(^{69}\text{Ni})$ (continued)

the branching is not stated.
 # Seen also in $\gamma\gamma$ data in 2003Ma50.
 @ Additional information 1.

 ^{69}Ni IT decay (0.439 μs) 2003Ma50,1998Gr14Decay Scheme

Intensities: % photon branching from each level
 %IT=100.0

